MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
OPERATING PERMIT TECHNICAL REVIEW DOCUMENT

Permitting and Compliance Division
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PPL Montana, LLC
JE Corette Steam Electric Station
Section 2, Township 1 South, Range 26 East, Yellowstone County, Montana
301 Charlene St.
Billings, MT 59107

The following table summarizes the air quality programs testing, monitoring, and reporting requirements applicable to this facility.

Facility Compliance Requirements	**Yes**	**No**	**Comments**
Source Tests Required	X		Method 5, 5B, 5D, or 17 as appropriate; Method 202; Method 6 or 6c; Method 9
Ambient Monitoring Required		X	
COMS Required	X		OP2953-08 Appendix E
CEMS Required	X		OP2953-08 Appendix F and Appendix G
Mercury Emissions Monitoring System (MEMS) Required	X		
Schedule of Compliance Required		X	
Annual Compliance Certification and Semiannual Reporting Required	X		As Applicable
Monthly Reporting Required		X	
Quarterly Reporting Required	X		
Applicable Air Quality Programs			
ARM Subchapter 7 Montana Air Quality Permit (MAQP)	X		MAQP #2953-00
New Source Performance Standards (NSPS)		X	
National Emission Standards for Hazardous Air Pollutants (NESHAPS)		X	No, Except for 40 CFR 61, Subpart M
Maximum Achievable Control Technology (MACT)	X		40 CFR 63, Subparts ZZZZ and UUUUU
Major New Source Review (NSR) – includes Prevention of Significant Deterioration (PSD) and/or Non-attainment Area (NAA) NSR	X		Facility is a major stationary source, but has not gone through NSR permitting
Risk Management Plan Required (RMP)		X	
Acid Rain Title IV	X		OP2953-08, Appendix H
Compliance Assurance Monitoring (CAM)	X		OP2953-08, Appendix K
State Implementation Plan (SIP)	X		General SIP and SO_2 SIP, Appendix I
Federal Implementation Plan (FIP)	X		Montana Regional Haze FIP 40 CFR 52.1396

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SECTION I. GENERAL INFORMATION

A. Purpose

This document establishes the basis for the decisions made regarding the applicable requirements, monitoring plan, and compliance status of emissions units affected by the operating permit proposed for this facility. The document is intended for reference during review of the permit by the United States Environmental Protection Agency (EPA) and the public. It is also intended to provide background information not included in the operating permit and to document issues that may become important during modifications or renewals of the permit. Conclusions in this document are based on information provided in the Title V Operating Permit renewal application submitted to the Department of Environmental Quality (Department) on April 16, 2010, and additional information received on March 29, 2012. Historic information in this document are based on information gathered from the original application submitted by Montana Power Company (MPC) on June 12, 1996, and additional submittals on December 20, 1996, October 7, 1996, July 21, 1997, October 1, 1997, and December 21, 1999. Requests for administrative amendments were submitted on January 17, 2003, and February 14, 2003, (OP2953-02), and October 9, 2003 (OP2953-03). A request for renewal was submitted on August 4, 2003, with additional information received on April 16, 2004 (OP2953-04). A request for a permit modification was submitted on December 31, 2008 (OP2953-05).

B. Facility Location

The PPL Montana, LLC (PPLM) JE Corette facility is located in Section 2, Township 1 South, Range 26 East, Yellowstone County, Montana.

C. Facility Background Information

Montana Power Company began operation of the Corette Plant in September 1968. The construction and operation of the plant began prior to the implementation of the Montana air quality regulations. No preconstruction permit was required. Since 1968, Montana Air Quality or preconstruction permitting has not been triggered at the facility because no changes have resulted in an increase in emission of 25 or more tons per year. However, new mercury control requirements implemented under the preconstruction permitting program required that PPLM obtain a Montana Air Quality Permit (MAQP) to include mercury provisions under the Administrative Rules of Montana (ARM) 17.8.771 for the Corette Plant. **MAQP #2953-00** was issued on April 9, 2009.

Operating Permit #OP2953-00 was issued effective on January 1, 1999.

On June 18, 1999, the Department was initially notified the JE Corette facility would be sold by Montana Power Company (MPC) to the Pennsylvania Power & Light Global (PP&L). This correspondence stated that the expected closing would occur around September 2, 1999; however, subsequent phone conversations revealed the closing would be postponed. On December 21, 1999, the Department received final notice concerning closing of the sale for the JE Corette facility in Billings Montana. The signing of contracts transferring ownership to PP&L took place on December 17, 1999. An administrative amendment was issued effective December 29, 1999, to transfer Permit #OP2953-00 from MPC to PP&L. **Operating Permit #OP2953-01** replaced Operating Permit #OP2953-00.

On January 17, 2003, and February 14, 2003, administrative amendment requests were submitted to change the responsible official for the facility from Carlton Grimm to James Parker and to change the facility name from Pennsylvania Power & Light Montana, LLC to PPLM. **Operating Permit #OP2953-02** replaced Operating Permit #OP2953-01.

On October 9, 2003, the Department received a request from PPLM for an administrative amendment of OP2953-02 to update Section V.B.3 of the General Conditions incorporating changes to federal Title V regulations 40 CFR 70.6(c)(5)(iii)(B) and 70.6(c)(5)(iii)(C) (to be incorporated into Montana's Title V rules at ARM 17.8.1213) regarding Title V annual compliance certifications. **Operating Permit #OP2953-03** replaced Operating Permit #OP2953-02.

On August 4, 2003, the Department received an application for the renewal of Title V Operating Permit #OP2953-03. Additional information was received by the Department on April 16, 2004. The permit was updated to reflect current Department rules, rule citations, and permit format. **Operating Permit #OP2953-04** replaced Operating Permit #OP2953-03.

On December 31, 2008, the Department received an application for the modification of Title V Operating Permit #OP2953-04 to include mercury emission limitations under ARM 17.8.771. The mercury control rule is implemented through the MAQP program and required that PPLM obtain an MAQP to establish a mercury emission limit and associated operating requirements for the boiler. On February 3, 2009, the Department received a request to include Steve Christian as an Alternate Responsible Official. On April 9, 2009, the Department issued MAQP #2953-00 with mercury limits and operating requirements. Operating Permit #OP2953-04 was updated to reflect the new mercury control requirements and the new Alternate Responsible Official. **Operating Permit #OP2953-05** replaced Operating Permit #OP2953-04.

On April 16, 2010, the Department received a complete Title V Operating permit renewal application from PPLM. The Department issued Draft Title V **Operating Permit #OP2953-06** on May 16, 2011. The Department received substantive comments regarding the draft permit. The Department worked on preparing responses to comments and on January 17, 2012, the Department requested additional information from PPLM concerning the Compliance Assurance Monitoring plan (CAM plan) for the facility. The Department received this additional information on March 29, 2012. The Department prepared responses to the comments received on Draft Title V Permit #OP2953-06; however, this revision of the permit did not advance past this stage for reasons described in the following paragraph.

The Department made a determination that it was appropriate to re-issue the draft permit based on the substantive changes made to the CAM plan. This draft permit was assigned **Operating Permit #OP2953-07**. The Draft Title V Operating Permit #OP2953-07 was issued on August 10, 2012. The 30 day public comment period was set to end on September 10, 2012. On August 17, 2012, the Department received a request to extend the public comment period on Draft Operating Permit #OP2953-07. The Department granted the request and approved a 14-day extension to the original 30-day public comment period on Draft Operating Permit #OP2953-07. In order to be considered, the comments on Draft Operating Permit #OP2953-07 were to be received by September 24, 2012. The Department prepared responses to the comments received on Draft Title V Operating Permit #OP2953-07 and they were included in Section VII of that document. The Department included the responses prepared for comments on Draft Title V Permit #OP2953-06 in Section VI of #OP2953-07.

Operating Permit #OP2953-07 replaced Operating Permit #OP2953-05.

D. Current Permit Action

The Department opened up Operating Permit #OP2953-07 for the purpose of including permit conditions associated with the following:

- 40 CFR 63, Subpart UUUUU - *National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Coal and Oil-Fired Electric Generating Units*
- Montana's Regional Haze Federal Implementation Plan (FIP)

40 CFR 63, Subpart UUUUU

On February 16, 2012, EPA finalized the Mercury Air Toxics Standard (MATS) rule, also known as the Utility Maximum Available Control Technology (MACT) Standard for the utility sector. 40 CFR 63, Subpart UUUUU - *NESHAPs for Coal and Oil-Fired Electric Generating Units* was published as final in the Federal Register (77 FR 9464) with an effective date of April 16, 2012. On November 30, 2012, EPA proposed updates to this rule (Docket # EPA-HQ-OAR-2009-0234, 77 FR 71323). The updates that affect PPLM Corette are the requirements applicable during periods of startup and shutdown for MATS. Because these proposed changes have not been finalized, the Department refers to the Work Practice Standards in Table 3 of 40 CFR 63, Subpart UUUUU in #OP2953-08 for the JE Corette Boiler which is where the current version, and future final version, of the requirements applicable during periods of startup and shutdown for MATS are described.

Montana's Regional Haze FIP

One of the principal elements of the visibility protection provisions of the FCAA is the provision in 42 U.S.C. Sec. 7491 addressing the installation of Best Available Retrofit Technology (BART) for certain existing sources. The FCAA defines the sources potentially subject to BART as major stationary sources, including reconstructed sources, from one of 26 identified source categories which have the potential to emit 250 tons per year or more of any air pollutant, and which were placed into operation between August 1962 and August 1977. The PPLM JE Corette Unit 1 boiler was included under the list of sources potentially subject to BART.

On September 18, 2012, EPA adopted, as a final regulation, revisions to 40 CFR Part 52, Approval and Promulgation of Implementation Plans; State of Montana; State Implementation Plan and Regional Haze FIP. See 77 FR 57863-57919. The final rule became effective on October 18, 2012. The EPA promulgated the FIP to address regional haze in the State of Montana and this final rule making will affect the PPLM Corette facility. The regulation requires that compliance with BART PM limitations for the JE Corette Unit 1 boiler must be achieved by November 17, 2012. Compliance with specific SO_2 and NO_x limitations set forth within the FIP must be achieved within 180 days after the effective date of the FIP where installation of additional controls is not necessary to comply with the BART limit; otherwise the compliance deadline is five years after the effective date of the FIP. For the JE Corette Unit 1 boiler, additional controls will not be necessary to comply with the SO_2 and NO_x limitations; therefore, the compliance date is April 17, 2013 for those pollutants.

The current permit action incorporates requirements associated with 40 CFR 63, Subpart UUUUU as well as BART limitations for PM, SO_2, and NO_x established as a result of promulgation of Montana's Regional Haze FIP. **Operating Permit #OP2953-08** replaces Operating Permit #OP2953-07**.**

Taking and Damaging Analysis

HB 311, the Montana Private Property Assessment Act, requires analysis of every proposed state agency administrative rule, policy, permit condition or permit denial, pertaining to an environmental matter, to determine whether the state action constitutes a taking or damaging of private real property that requires compensation under the Montana or U.S. Constitution. As part of issuing an operating permit, the Department is required to complete a Taking and Damaging Checklist. As required by 2-10-101 through 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

E. Compliance Designation

The PPLM Corette facility was last inspected on April 22, 2010. A Full Compliance Evaluation (FCE) was conducted on May 3, 2010. At the time of the inspection and FCE, the facility was found to be in compliance with all applicable requirements. On December 6, 2010, the second semiannual particulate compliance test for 2010 was conducted. Preliminary results reported on December 13, 2010 indicated particulate emissions were higher than the allowable level. Immediate action was taken by lowering the plant load to 150 MW gross, a level at which compliance with the particulate emission standard was demonstrated in July 2010. On December 14, 2010, a series of diagnostic particulate tests was performed which confirmed particulate emissions were within the allowable level at that load (150 MW gross). On December 16, 2010, final results from the December 6, 2010 test were received, which confirmed particulate emissions higher than the allowable level. Plant operations were limited to 125 MW gross from December 17, 2010 to January 10, 2011 due to coal mill repairs. On December 20, 2010, another particulate compliance test was conducted at 125 MW gross; it showed particulate emissions within the allowable level. On January 12, 2011, a particulate compliance test was conducted at 150 MW gross. It also showed compliance with the particulate standard at this self-imposed load limitation. Another particulate compliance test was conducted at 155 MW gross on February 10, 2011. Those results indicated particulate emission within the allowable level.

On March 22, 2011, the Department issued a violation letter to PPLM regarding the particulate emissions violation from the December 13, 2010, emissions test. Formal enforcement was taken and on February 2, 2012, the Administrative Order on Consent (AOC) was signed and the violation was considered closed as of July 5, 2012, when the Department determined all terms of the AOC had been met. The settlement included a Supplemental Environmental Project which included paving approximately 13,000 square feet of gravel at the PPLM facility; the remainder of the settlement was a cash payment of an $8,000 penalty. The AOC did not contain any provisions that need to be added to the Title V permit.

On September 28, 2012, the Department issued an FCE that included an Inspection Report for PPLM. The FCE contained compliance-related information that was discovered by the Department in the course of conducting the inspection. The FCE also contained the full compliance analysis, and as documented in the FCE Section XI. Findings and Recommendations are summarized below:

A The Montana SIP for sulfur dioxide (SO_2) contains conditions under which PPLM must monitor compliance at the J.E. Corette facility. On June 9, 1998, the Department and Montana Power Company (now PPLM) stipulated to complying with paragraphs 1-20, including Exhibit A and Attachment #1. Exhibit A, Section 6 B (3), states that the Montana Power Company (PPLM) shall install and maintain a backup temperature and flow rate monitoring system for the main boiler stack. Upon installation, Montana Power Company (PPLM) shall operate the backup temperature and flowrate monitoring system whenever the primary (CEMS) temperature and flowrate monitoring system is determined to have failed. On August 21, 2012, during a review of the SO_2 SIP, Department staff learned that the backup flow monitoring equipment was not installed. J.E. Corette staff explained that backup flow data is estimated during flow monitor down times by substituting more restrictive data, as required under 40 CFR Part 75; and

B. On June 9, 1998, the Department and Montana Power Company (PPLM) stipulated to complying with paragraphs 1-9, including Exhibit A-1 and attachments. In Exhibit A-1, Section 4 (E) (8), any modifications to the Quality Assurance Project Plan (QAPP) and Standard Operating Procedures (SOP) documents shall be submitted to the Department within 60 days after the CEMS equipment changes, including the installation of the backup temperature and flow rate monitoring system equipment, have been made and shall follow similar timelines as presented in Section 4(E)(2-5) of the Exhibit A-1. On September 1, 2010, PPLM submitted to the Department the Stack Monitor Certification Test Report for new SO_2, oxides of nitrogen (NO_x), and carbon dioxide (CO_2) monitors.

On October 19, 2012, the Department issued Violation Letter #VLRG12015 to PPLM citing operation without a valid Title V operating permit, violations of an Order of the Board of Environmental Review (BER) described in paragraphs A and B above, and excess opacity emissions. With regard to operation without a valid Title V operating permit, the letter stated the following: "Under the Administrative Rules of Montana (ARM) 17.8.1220(12), expiration of an air quality operating permit terminates the source's right to operate unless a timely and administratively complete permit renewal application has been submitted consistent with ARM 17.8.1205(2) and 17.8.1221. According to ARM 17.8.1205(2)(c), for renewal, a permittee shall submit a complete air quality operating permit application to DEQ not later than six months prior to the expiration of the existing permit, unless otherwise specified in that permit. On April 16, 2010, DEQ received a complete Montana Air Quality Operating Permit (Operating Permit) renewal application from PPL for the J.E. Corette Power Plant. Operating Permit #OP2953-05 for the J.E Corette Power Plant expired on August 25, 2010. For the application to be considered timely, PPL should have submitted a renewal application for Operating Permit #OP2953-05 by February 25, 2010. Therefore, PPL has been operating without a valid Title V Operating Permit at the J.E. Corette Power Plant since August 25, 2010." A response letter was received from PPLM on October 24, 2012, acknowledging the late renewal application and also addressing the other allegations described in the violation letter.

The Department filed a lawsuit, Case No. 12-1546, against PPLM in Yellowstone County District Court on November 21, 2012, to follow up on the allegations in the violation letter. The lawsuit claims that: a) PPLM operated its Corette facility without the required operating permit from August 25, 2010, through November 21, 2012; b) PPLM violated the June 9, 1998, BER Order by failing to install and maintain a backup temperature and flow rate monitoring system for the main boiler stack at the Corette facility; c) PPLM violated the same BER Order by failing to submit to the Department, within 60 days after making changes to continuous emissions monitoring equipment, required modifications to the QAPP and SOP documents for new monitors for SO_2, NO_x, and CO_2 that were installed before September 1, 2010; and d) PPLM violated the opacity limits at the Corette facility at least 21 times from January 1, 2008, through November 21, 2012.

The lawsuit has been served on PPLM, and penalties and injunctive relief are being sought.

SECTION II. SUMMARY OF EMISSION UNITS

A. Facility Process Description

PPLM operates one tangential coal fired boiler and associated equipment for the generation of electricity.

B. Emission Units and Pollution Control Device Identification

Emission Unit ID	Description	Pollution Control/Device Practice
EU1	Fly Ash Handling System	Dust collection equipment; dustless ash loading system; or contained railcars and trucks
EU2	Auxiliary Boiler	None
EU3	Coal Handling	Dust suppression chemicals (foam),; water on conveyor #3, covered conveyors, telescopic chute; or dust collectors
EU4	Coal Storage Piles	Sealant (dead storage piles), water and dust suppressant application (active piles)
EU5	Gasoline Storage Tank	None
EU7	JE Corette Boiler	Electrostatic precipitator; mercury oxidizer/sorbent, low sulfur coal
EU8	Plant Roads	Washed and cleaned with dust suppressant, water application
EU9	Process Ponds	Wet material
EU11	Mercury Oxidizer/Sorbent Handling System	Bin vent filter

C. Categorically Insignificant Sources/Activities

The following is a list of the emission units that are included as insignificant in this operating permit.

Emission Unit ID	Description
EU11	Process Tank Vents
EU12	Carbon Dioxide System Safety Valves and Vents
EU10	1,000 Gallon Diesel Tank

SECTION III. PERMIT CONDITIONS

A. Emission Limits and Standards

The following is a discussion of some applicable requirements.

1. Operation Modification Plan

The Operation Modification Plan (OMP) existed prior to the Title V permitting program. Therefore, a brief history of the OMP has been included and should be noted that PPLM was previously the Montana Power Company. On February 28, 1985, the Montana Department of Health and Environmental Sciences (DHES) issued a Notice of Violation/Order to Take Corrective Action regarding particulate matter emissions from the Montana Power Company's (MPC) J.E. Corette Plant in Billings. This Order required MPC to submit a Compliance Plan, the OMP, to the DHES's Air Quality Bureau (AQB) by July 1, 1985. The plan was to specify the measures adequate to reduce emissions to levels below the standard in ARM 17.8.309 (previously ARM 16.8.1402). This plan was submitted to the AQB on June 17, 1985, and was approved by the AQB on July 16, 1985.

The Order to Take Corrective Action allowed the Compliance Plan to address both Air Pollution Control (APC) equipment modifications and operating changes which would be successful in maintaining particulate matter emissions within the standard. The approved Compliance Plan did contain both APC Modification and OMP.

The original deadline for providing the AQB with a demonstration that the OMP would keep particulate matter emissions within limits was April 1, 1986. MPC requested, and the AQB approved, extending the deadline to May 1, 1986, in order to complete additional testing necessary to confirm critical aspects for final Plan development. This testing was completed and added to the data base from which the Plan was prepared.

Since July 16, 1986, the OMP has been implemented successfully by MPC. It became apparent from the data collected during compliance tests mandated in the Plan that mass emissions were consistently well below the emission standard in ARM 17.8.309 (previously ARM 16.8.1402). Operating conditions in the summer of 1986 suggested that some of the OMP specifications were precluding the most cost effective, yet still environmentally sound, operation of the J.E. Corette Plant.

MPC, with AQB consent, conducted tests in July and November 1987 to confirm that plant operation outside of OMP ranges for certain operational parameters did not negatively affect the plant's ability to meet the ARM standard. Test data did confirm this fact and in February, 1988 the AQB consented to allow the plant to operate in any manner deemed necessary to achieve good power plant practice as long as all emission standards were met. The data from the confirmation tests, as well as all compliance testing since OMP inception, were added to the OMP data base, and Revision 2 updated the OMP to reflect these changes.

Revision 3 of the OMP incorporated a change in the method of compliance demonstration. Since OMP inception, plant compliance was demonstrated by reported adherence to the Operational Assessment Parameters (OAP) and the results of quarterly Reference Method 5 tests. On July 21, 1989, the AQB agreed to a May 9 proposal by MPC to reduce the number of annual particulate tests necessary to demonstrate compliance.

Agreed upon was a reduction from four tests per year to two per year, with the tests performed in alternating quarters. In anticipation of increased reliance upon the opacity monitor for compliance demonstration, this agreement also provided for the performance of a quality control

audit on the monitor twice per year in the quarters when no compliance test is conducted, plus the performance of a comprehensive field monitor calibration once per year. The results of these QC activities were reported to the AQB in the J.E. Corette monthly emissions reports. These changes were implemented in 1990.

On November 13 and 28, 1990, the Corette plant was found in violation of the ARM 17.8.309 (previously ARM 16.8.1402) requirements due to a malfunction of the electrostatic precipitator (ESP). This malfunction necessitated electrically splitting the west outlet bank, or taking one-half of this bank out of service. The Consent Decree entered in the resulting enforcement action in state district court included conditions requiring MPC to amend the OMP to increase compliance testing for a specified time and address ESP malfunctions. The Consent Decree was contained in Appendix IV of the OMP.

Revision 4 incorporated provisions for increasing particulate compliance test frequency from semi-annually to quarterly. This increased frequency was applicable for two years, starting in September, 1991 and ending in September, 1993, at which time the frequency of testing reverted back to semi-annually. Revision 4 also addressed times when the ESP malfunctions, resulting in all or a portion of a bank being taken out of service. This revision defined a specific test plan to determine a safe level of particulate compliance under these conditions. This response plan did not include reliance upon opacity to indicate mass emissions, since the normal opacity/mass relationship may be altered by the ESP malfunction.

The OMP was modified as part of draft permit OP2953-07 to incorporate changes that resulted from changes in the CAM plan, and Revision 5 was included as part of the draft permit . The Department received comments from PPLM regarding the incorporation of OMP Revision 4, the updated OMP Revision 5, and the CAM Plan in draft OP2953-07. Upon reviewing the comments, the Department determined that Revision 5 of the OMP should replace Revision 4. Also, compliance with the CAM Plan constitutes compliance with the OMP. However, because the OMP resulted from a district court consent decrees, the Department does not have the authority under Title V to eliminate the OMP. Also, one remaining requirement from the 1991 Consent Decree was not included in the CAM Plan. The proposed permit requires compliance with the CAM Plan and a provision of the 1991 Consent Decree concerning actions required if the ESP malfunctions. That provision was added in Section III.G of permit OP2953-07. It required the following:

> When a malfunction of the electrostatic precipitator occurs resulting in the failure of a bank or a portion of a bank, PPLM shall reduce the load at the Corette Plant to 150 MWG and schedule particulate emission compliance source testing within 40 hours. Those tests would take place at four different loads (140, 145, 150, and 155 MWG). The Plant would then operate at the highest load where all three runs in a test series demonstrate compliance with ARM 17.8.309 (previously ARM 16.8.1402). If all tests indicated emission rates above the standard, the Plant would reduce load to 135 MWG and schedule another series of particulate emission compliance source testing within 40 hours. It is recognized that as a result of the testing to determine compliance described above, PPLM will be altering the load of the Corette Plant which will affect the rate of particulate emissions, and that emissions in excess of the standard in ARM 17.8.309 (previously ARM 16.8.1402) are possible. Such testing to determine compliance is necessary for MPC to derive an operational strategy to respond to the malfunction of the electrostatic precipitator.

2. SIP

On August 19, 1996, the Board of Environmental Review issued an order to MPC that included a signed stipulation. The order adopted revisions to the MPC control strategy for attainment and maintenance of the SO_2 National ambient Air Quality Standard for the Billings/Laurel Area. The emissions limits and methods of demonstrating compliance are applicable requirements for operating permit purposes. EPA approved the Billings/Laurel SO_2 Control Plan into the Montana State Implementation Plan (SIP) on May 2, 2002, for an effective date of June 2, 2002. The SIP in its entirety can be accessed, as listed in Appendix I, from the Department as well as from the web link: EPA's Air Pollution State Implementation Plans for Region 8 | Region 8 | US EPA. Please select SIP material for Yellowstone County once you access the web page and see Appendix I for step by step instructions.

3. Mercury

Mercury control requirements implemented under the preconstruction permitting program have required that PPLM obtain an MAQP to include mercury provisions under ARM 17.8.771 for the Corette Plant. On April 9, 2009, the Department issued MAQP #2953-00 with the following mercury limits and operating requirements, which are also reflected in Operating Permit #OP2953-05 (the mercury provisions pursuant to ARM 17.8.771 are "State Only" provisions):

- Beginning January 1, 2010, emissions of mercury from the boiler shall not exceed 0.9 pounds mercury per trillion British thermal units (lb/TBtu), calculated as a rolling 12-month average (ARM 17.8.771).
- PPLM shall install a mercury control system that oxidizes and sorbs emissions of mercury. PPLM shall implement the operation and maintenance of the mercury control system on or before January 1, 2010 (ARM 17.8.771).

B. Monitoring Requirements

1. ARM 17.8.1212(1) requires that all monitoring and analysis procedures or test methods required under applicable requirements are contained in operating permits. In addition, when the applicable requirement does not require periodic testing or monitoring, a permit must require periodic monitoring that is sufficient to yield reliable data from the relevant time period that is representative of the source's compliance with the permit.

The requirements for testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance do not require the permit to impose the same level of rigor for all emissions units. Furthermore, they do not require extensive testing or monitoring to assure compliance with the applicable requirements for emission units that do not have significant potential to violate emission limitations or other requirements under normal operating conditions. When compliance with the underlying applicable requirement for an insignificant emissions unit is not threatened by lack of regular monitoring and when periodic testing or monitoring is not otherwise required by the applicable requirement, the status quo **(i.e., no monitoring)** will meet the requirements of ARM 17.8.1212(1). Therefore, the permit does not include monitoring for insignificant emission units.

The permit includes periodic monitoring or recordkeeping for each applicable requirement. The information obtained from the monitoring and recordkeeping will be used by the permittee to periodically certify compliance with the emission limits and standards. However, the Department may request additional testing to determine compliance with the emission limits and standards.

The Department has determined that weekly visual inspections are appropriate for the fugitive emission units located at the facility. The method of demonstrating compliance includes a requirement to observe specific sites and to log the information. The log will be kept at the plant site and be available for review during inspections. The compliance demonstration requires verification that visual inspections were performed and they were recorded and a log maintained.

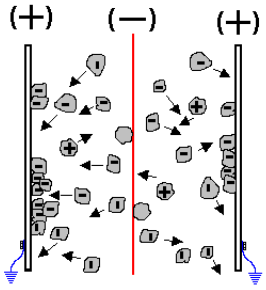
2. CAM Plan

PPLM is required to adhere to a CAM Plan for the ESP on the JE Corette Unit 1 boiler. The following is information to support and help clarify the CAM plan and the facility's control equipment.

PPL Montana Corette plant is a coal-fired boiler that utilizes an ESP to remove particulate matter (PM) from the flue gas exhaust streams. Opacity is a key performance indicator for assuring compliance with the PM limit. Opacity is measured in the stack on a continuous basis. Opacity data is collected and stored in the Data Acquisition and Handling System (DAHS). Six-minute, hourly, and daily averages are calculated based on minute data. As stated in the PPLM CEMS QA Plan, daily continuous opacity monitoring systems (COMS) calibration drift checks are conducted and quarterly opacity accuracy audits are conducted. PM emissions will be considered to be in compliance with the applicable limits when the opacity is ≤ 14% as measured on a daily average. Data regarding opacity monitoring is reported on a quarterly basis unless required otherwise during any excursion as required by Section V.E. of the permit. The Daily Average Opacity indicator is based on semi-annual performance tests that have indicated that the PM standard is met when opacity is ≤ 14%, as seen in the figure showing PPLM's PM emission tests in 2009-2011, which is in Appendix K of the permit. Corrective actions will be taken as necessary within each day when the day's daily building block average is above 14%. This will help ensure the daily average opacity remains at or below 14%. Currently the unit has a Monitor Labs USI 560 Lighthawk opacity monitor installed in the stack. Flue Gas Exit Temperature, Total ESP Powers, andCoal Ash Content are also parameters that will be monitored as indicators of the proper operation of the ESP. The plant control room operator will monitor these performance indicators on a continuous basis and take action to help prevent excursions of the performance indicators at the set ranges stated in Appendix K of the permit. A review of historical operating data indicates that the ESP is operating properly when the flue gas exit temperature is below 290°F, total ESP power is above 150 kilovolt-amperes (kVAs), and coal ash content is less than 10 lb/MMbtu.

The electrostatic precipitator

In 1905, a physics professor at the University of California, F.G. Cottrell, concluded a series of experiments that resulted in the development of the electrostatic precipitator. The process was so effective that its use has become widespread in industry and domestic applications today. The equipment is simple and contains essentially two pieces of material, one with a significant negative charge or excess of electrons, and the other grounded. The voltage between the two pieces could range from thousands to a hundred thousand volts. As a particle approaches the negatively charged part (wire, in Corette's case), it picks up an electrical charge or excess of electrons. This charged particle now migrates towards the grounded part (a collection plate) and attaches itself and gives up its excess electrons or charge to the plate. An occasional particle ends up with a lack of electrons or a positive charge associated with it. In this case, it will migrate towards the wire and be neutralized.



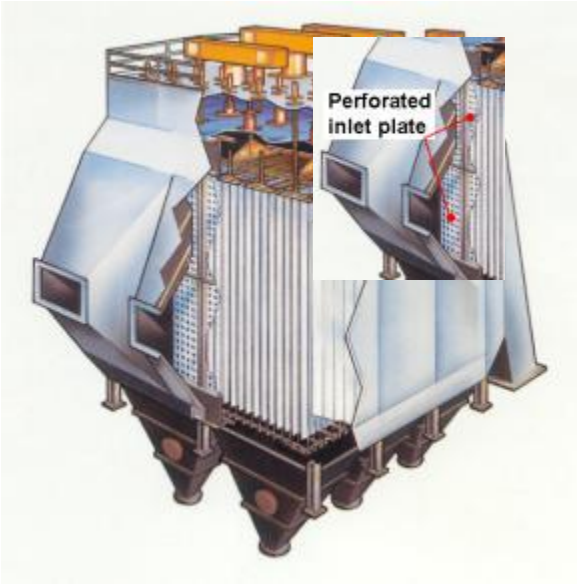
There are several essential elements to this precipitator that are necessary for it to work. These elements include:

1. A large enclosure,
2. Positive and negative wires and plates and lots of them,
3. A source of electrical potential,
4. Plenty of time for the charged particles to migrate from the wire to the plate,
5. A method of removing the particles from the collecting plates and wires,
6. A control system, and
7. Although not part of the precipitator, there must also be a method of removing the collected particles from the precipitator.

Precipitator Construction

This cutaway produced by the BHA Group, Inc., the suppliers of the plant rapper and power control systems, shows all the essential parts of the Corette precipitator.

A large enclosure



There are a couple good reasons for the large enclosure, the precipitator being the second largest piece of equipment in the plant (not counting the stack). The enclosure is the passageway for approximately 600,000 cubic feet (ft^3) per minute of flue gas at a temperature slightly less than 300º F and under a slight positive pressure. The atmosphere inside the enclosure contains a mixture of CO_2, CO, NO_x, SO_x, moisture, strong electrical charges, abrasive small ash particles, and some excess O_2 etc. All of this is in the presence of heat and time could allow problems to occur. During normal operations, the enclosure, including the ash collection hoppers, must remain hot at all times. If not, the moisture will condense out and cause the ash particles to stick to the surfaces. The moisture will also mix with the SO_x (various forms of sulfur oxides), forming acids, oxygen, and metal to form rust. When the flue gas enters the precipitator enclosure, it passes through a perforated plate that distributes the gas flow through the precipitator, which makes more efficient use of the available space.

There is also a penthouse that houses transformer rectifier (TR) insulators and bolting for the suspended plates and wires. This penthouse is pressurized to minimize ash buildup and condensation. There are two sources of air for the penthouse; one source is from the discharge of the forced draft (FD) fan with an isolation valve at the discharge, and the second most frequently used is from the atmosphere and seal air fan on the precipitator roof.

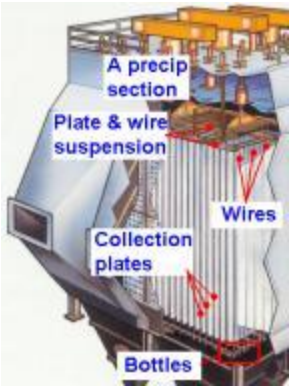
Key interlock system

Another important part of the enclosure is to keep people out when the precipitator is in service because of the danger of electrical accidents. For this reason, the enclosure and entry into the TR units etc. is protected by a key interlock system. The key interlock system consists of numbered keys for each breaker and a numbered key for each access door into the TR units and the precipitator housing.

To open a door, each key from each TR unit breaker must be removed and placed in its numbered position in the key storage location. When all the keys are in place, they can be turned, releasing keys for the TR units. However, in this case the TR units must be grounded before opening the doors, which would require another set of keys.

The opposite is true when returning the keys. All the door keys must be returned and placed in its numbered position before the keys to the breakers can be released. The system is complicated because it is necessary that all the steps be taken to ensure safety. If it isn't done correctly, access can't be gained. There are some numbered keys that will open multiple doors where the doors have the same function. It is essential that these keys be returned to their proper location and that they are not lost. Losing a key is a serious matter. Not everybody is issued a spare key and obtaining a replacement requires management's assistance. In some cases a lost key can only be replaced from the interlock system manufacturer. This is not the case at Corette.

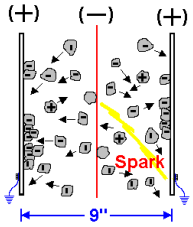
General ESP Configurations



The precipitator is divided in half and each half has three sections. Each section contains a series of collection chambers consisting of wire assemblies and collecting plants. There are 40 collecting plates with 36 wires between each set of plates. Each section is 9 inches wide between the plates, 9 feet deep and 30 feet tall. The precipitator contains a total of 160 collecting plates and 1872 wires or discharge electrodes.

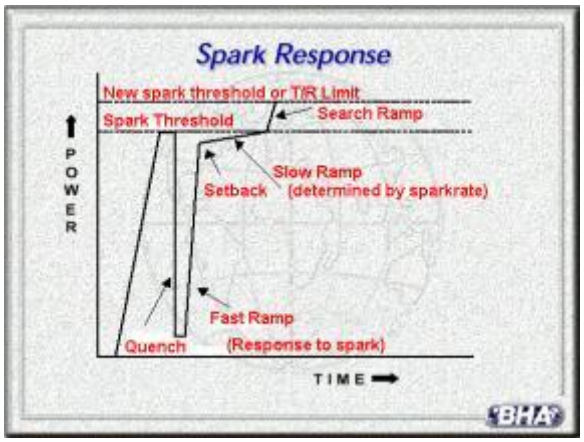
The wires are connected to a TR unit that supplies a DC source and each wire is maintained tight by a 15 or 25 lb weight or bottle attached to the bottom of each wire.

The wires are not straight round wires. Because they are required to ionize or charge flyash particles, they have sharp corners or points. These sharp corners and points aid in creating a corona, which is like an electron cloud, close to the wire through which the particle can pass and pick up a charge. Occasionally, wires break and fall into the ash hoppers. Broken wires also cause other problems and should be removed as soon as possible. The bottles will not fall because of the way they are attached to the precipitator.



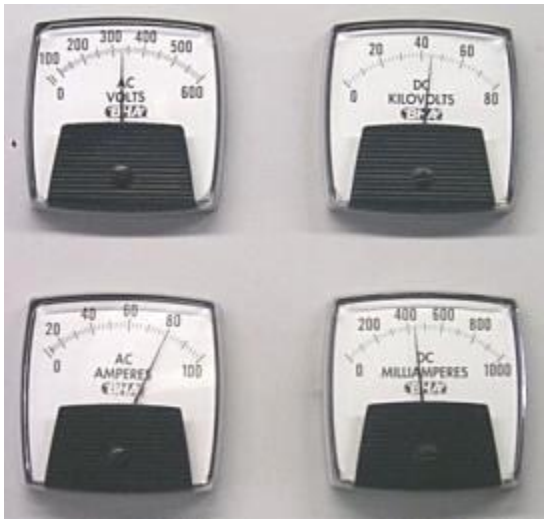
Source of electrical potential

Power is supplied to the precipitator wires by dual-purpose transformer rectifiers. The transformer portion increases the voltage from 480 volts to several thousand volts depending on what the computer controls require. The rectifier portion of the TR rectifies the AC to DC and is connected to the discharge electrodes. The control system varies the voltage going to the wires and keeps it as high as possible for as long as possible. There is a continuous flow of electrical current between the wires and plates as the flyash particles migrate from the wire to the plates. The greater the voltage difference, the better the particle charging and the more efficient the precipitator. However, once in a while a spark will jump the distance between the wire and plate, discharging or quenching the wire and stopping the particle charging action and migration. This is undesirable, but it is part of the process. The limit on this spark rate is 30 sparks per minute. Some sparking is necessary for good operation, but too much is damaging and loses efficiency. The controller attempts to charge the wire as high as possible for as long as possible. When a spark does occur, it recharges the wire as quickly as possible to just below the sparking threshold. It then continues at a slower charge rate until another spark occurs. This process maintains the maximum voltage difference. Since the efficiency of the precipitator depends on its ability to charge particles and help them migrate towards the collection plate, the ability of a particle to accept a charge is very important. This is referred to as resistivity or resistance to current flow. If the flyash particle will not accept a charge (high resistivity) it will not migrate to the collection plate and will not be removed from the gas stream. The ability of a particle to accept a charge depends on several things, including the sulfur (especially SO_3), sodium, calcium and magnesium content of the particle, and temperature. There are also other influencing factors. Sulfur, sodium, and high temperature lower resistivity while calcium, magnesium and low temperature raise resistivity. These elements are found in the coal being burned so the resistivity of the flyash depends and varies with the coal supply. In some cases it is necessary to add SO_3 or other compounds to the coal or flue gas to improve precipitator performance. These are very common practices.



The TR units are located on the roof of the precipitator structure and the controls for the units are in a small room adjacent to the precipitator just above the elevator 3rd floor.

On the control panel there are four meters and a control panel. The meters show the applied AC and DC voltages and AC and DC the current flow. When a spark occurs, these meters will jump.



The other part of the control panel is the computer interface. During normal operations, the screen displays the TR status, whether it is fast charging, quenching, slow rate, or limited, and various other information about voltage and current flow.

Flyash particle migration time

One of the main reasons that the precipitator is so large is to allow the flue gas to slow down so it can pick up a charge at any one of the conducting wires and then have time to migrate to any one of the collection plates. If the gas velocity is too great, the particle will go through the precipitator without having a chance to attach itself to a plate. Another reason is to allow the particles to fall into the flyash hoppers. When the ash is knocked off the collection plates, it falls by gravity into the hoppers. If the velocity is too high, some of the ash will be swept away with the gases passing through the precipitator.

The collection plate and wire rapping system

When the flyash sticks to the collecting plate, it gives up its charge to the plate and lightly sticks. The process works the same with the wires, although they don't become nearly as loaded as the plates.

A very light tap on the plates will knock the ash off, allowing it to fall into the hoppers. The rappers are sequenced by a control system made by BHA Group, Inc. (BHA). A signal is produced by the system that tells the rapper when to rap and it ensures that only one rapper is rapping at a time. The rappers consist of a solenoid and a loose iron weight. When the system sends a rap signal to the rapper, the solenoid is energized and the iron weight is pulled into the canister. When the voltage on the solenoid is dropped, the weight also drops, tapping lightly on top of shafts that are connected to the wire and plate support beams inside the precipitator. The intensity and frequency is programmed into the computer to avoid too hard and too many rapping occurrences.

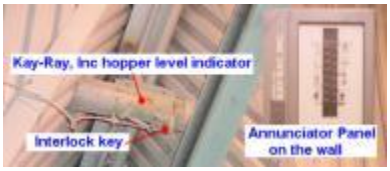
The precipitator control system

The BHA control system is a computer control system and allows the precipitator to operate automatically without operator action. The controls allow the precipitator to be in operation at all times, even when the unit is not on line, and adjusts the voltages and other functions accordingly.

Ash removal system

The ash removal system is not part of the precipitator, but it is essential that this system operation be done properly. The operation of the flyash removal system will be discussed in the ash removal section of the equipment manual. The ash in the hoppers must be removed regularly, if not constantly. Ash that is allowed to settle will cool, and moisture in the ash can condense and cause the ash to harden. A rodding port is installed in the hopper so it can be rodded as needed to remove the ash that might plug the feeder inlet.

Also, if the hoppers are allowed to overfill, they can interfere with the wires and bottles and cause them to become loose and possibly come in contact with the plates. This could result in burning and breaking the wires as well as other damage. Flyash level in the hoppers is monitored by Kay-Ray, Inc radioactive level detector, and an alarm sounds when the level becomes high. A panel on the wall will show which hopper is high. These hoppers are protected by a key interlock system also. It is necessary to close the radioactive source, as well as de-energize the hopper heating system, before entering the hopper.



REFERENCES for materials provided in PPLM response dated March 29, 2012:

PRC-100 Programmable Rapper Control, BHA Group, Inc., March 1997
Manual & Presentations CD, BHA Group, Inc, 1996, and the seminar manual and course outline
Power Guard S-300 Management System Automatic Voltage Control Operations Manual, BHA Group, Inc., Revision A July 1997
Operating and Instruction Manual for Cottrell Electrical Precipitators, Research-Cottrell, Inc.

3. Visual Surveys

The Department is requiring a weekly visual survey on several emitting units. Please refer to the permit for specific language related to visual surveys.

C. Test Methods and Procedures

The operating permit may not require testing for all sources if routine monitoring is used to determine compliance, but the Department has the authority to require testing if deemed necessary to determine compliance with an emission limit or standard. In addition, PPLM may elect to voluntarily conduct compliance testing to confirm its compliance status.

The mercury limit will be monitored using a Mercury Emission Monitoring System (MEMS) pursuant to Appendix L. #OP2953-07 incorporated additional testing requirements for the JE Corette Boiler. PPLM is required to conduct Method 5 or 5B particulate testing in conjunction with a Method 202 condensable particulate test on a semi-annual basis on the JE Corette Boiler.

D. Recordkeeping Requirements

PPLM is required to keep, as a permanent business record, each record listed in the Title V operating permit for at least five years following the date of the generation of the record. All source test recordkeeping shall be performed in accordance with the Montana Source Test Protocol and Procedures manual

E. Reporting Requirements

Reporting requirements are included in the permit for each emissions unit, and Section V of the operating permit "General Conditions" explains the reporting requirements. However, PPLM is required to submit semi-annual and annual monitoring reports to the Department, and to annually certify compliance with the applicable requirements contained in the permit. The reports must include a list of all emission limits and monitoring deviations, the reason for any deviation, and the corrective action taken as a result of any deviation. PPLM is also required to submit quarterly reports as required by Section III.G of the permit.

F. Public Notice

In accordance with ARM 17.8.1232, a public notice was published in the *Billings Gazette* newspaper on or before April 18, 2013. The Department provided a 30-day public comment period on the draft operating permit from April 18, 2013, to May 20, 2013. ARM 17.8.1232 requires the Department to keep a record of both comments and issues raised during the public participation process. The comments and issues received by May 20, 2013 will be summarized, along with the Department's responses, in the following table. All comments received during the public comment period will be promptly forwarded to PPLM so they may have an opportunity to respond to these comments as well.

Summary of Public Comments

Person/Group Commenting	Comment	Department Response

Draft Permit Comments

Summary of Permittee Comments

Permit Reference	Permittee Comment	Department Response

Summary of EPA Comments

Permit Reference	EPA Comment	Department Response

SECTION IV. NON-APPLICABLE REQUIREMENT ANALYSIS

The Department reviewed the rules and regulations contained in Section 8 of the original application that PPLM identified as non-applicable. The Department included those rules and regulations that it agreed were non-applicable to the Corette plant in the operating permit in Section IV along with the reasons for non-applicability.

The Department did not, however, include as non-applicable all of the rules or regulations identified by PPLM. Rules and regulations that address procedural requirements and those that do not establish emission limits or applicable requirements on the facility were not included.

The following rules are not applicable to the facility due to the date of construction being after the affected facility applicability date in Subparts D and Y:of 40 CFR Part 60.

The Department also determined, based on the information supplied, that no preconstruction permit was previously required for the Corette facility because there were no changes to the facility since 1968 that triggered an increase in emissions of 25 tons or more per year. However, when mercury emission limitations were established under ARM 17.8.771, the facility was required to obtain a preconstruction permit (i.e., MAQP) specific to mercury control. MAQP #2953-00 was issued on April 9, 2009, to establish a mercury emission limit and associated operating requirements for the boiler in order to comply with ARM 17.8.771.

SECTION V. FUTURE PERMIT CONSIDERATIONS

A. MACT Standards (40 CFR Part 63)

PPLM's Corette facility is subject to the standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 63, Subpart DDDDD – *National Emissions Standards for Hazardous Air Pollutants for Major Industrial Sources: Industrial Commercial, and Institutional Boilers and Process Heaters* (the "Boiler MACT") because the facility includes an existing 31.5 MMBtu/hr auxiliary boiler. The current compliance date is March 21, 2014; however, EPA is working through efforts at reconsideration of the Boiler MACT at this time.

PPLM's Corette facility is subject to the standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 63, Subpart ZZZZ – *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* because the facility includes an existing 450 horsepower (hp) emergency engine/generator and an existing 94 hp emergency fire pump engine.

On February 16, 2012, EPA finalized the Mercury Air Toxics Standard (MATS) rule, also known as the Utility MACT, which was promulgated under 40 CFR 63, Subpart UUUUU – *National Emission Standards for Hazardous Air Pollutants: Coal and Oil-Fired Electric Utility Steam Generating Units*. PPLM's Corette facility is an affected source pursuant to this MACT standard, which has a compliance date of April 16, 2015. On November 30, 2012, EPA proposed updates to this rule (Docket # EPA-HQ-OAR-2009-0234, 77 FR 71323). The updates that affect PPLM Corette are the requirements applicable during periods of startup and shutdown for MATS. Because these proposed changes have not been finalized, the Department refers to the Work Practice Standards in Table 3 of 40 CFR 63, Subpart UUUUU in #OP2953-08 for the JE Corette Boiler which is where the current version, and future final version, of the requirements applicable during periods of startup and shutdown for MATS are described.

B. NESHAP Standards (40 CFR Part 61)

As of the date of issuance of this proposed permit, the Department is not aware of any future NESHAP standards that may be promulgated that will affect this facility.

C. NSPS Standards

As of the date of issuance of this proposed permit, the Department is not aware of any future NSPS standards that may be promulgated that will affect this facility.

D. Risk Management Plan

If a facility has more than a threshold quantity of a regulated substance in a process, the facility must comply with 40 CFR Part 68 requirements three years after the date on which a regulated substance is first listed under 40 CFR 68.130; or the date on which a regulated substance is first present in more than a threshold quantity in a process, whichever is later.

As of the date of issuance of this proposed permit, this facility does not exceed the minimum threshold quantities for any regulated substance listed in 40 CFR 68.115 for any facility process. Consequently, this facility is not required to submit a Risk Management Plan.

E. CAM Applicability

An emitting unit located at a Title V facility is subject to ARM Title 17, chapter 8, Subchapter 15 and must develop a CAM Plan for that unit if it meets the following criteria listed in ARM 17.8.1503:

- The emitting unit is subject to an emission limitation or standard for the applicable regulated air pollutant (unless the limitation or standard is exempt under ARM 17.8.1503(2));
- The emitting unit uses a control device to achieve compliance with such limit; and
- The emitting unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than major source thresholds.

The PPLM Corette facility meets the above criteria for PM. Refer to Appendix K of Operating Permit #OP2953-08 for the PM CAM plan and to Section III.B.2 of this document for additional information regarding the CAM plan.

F. PSD and Title V Greenhouse Gas Tailoring Rule

On May 7, 2010, EPA published the "light duty vehicle rule" (Docket # EPA-HQ-OAR- 2009-0472, 75 FR 25324) controlling greenhouse gas (GHG) emissions from mobile sources, whereby GHG became a pollutant subject to regulation under the Federal and Montana Clean Air Act(s). On June 3, 2010, EPA promulgated the GHG "Tailoring Rule" (Docket # EPA-HQ-OAR-2009-0517, 75 FR 31514) which modified 40 CFR Parts 51, 52, 70, and 71 to specify which facilities are subject to GHG permitting requirements and when such facilities become subject to regulation for GHG under the PSD and Title V programs.

Under the Tailoring Rule, any PSD action (either the construction of a new major stationary source or a major modification at a major stationary source) taken for a pollutant or pollutants other than GHG that would become final on or after January 2, 2011, would be subject to PSD permitting requirements for GHG if the GHG increases associated with that action were at or above 75,000 TPY of carbon dioxide equivalent (CO_2e) and greater than 0 TPY on a mass basis. Similarly, if such action were taken, any resulting requirements would be subject to inclusion in the Title V Operating Permit. Facilities that hold Title V permits due to criteria pollutant emissions over 100 TPY would need to incorporate any GHG applicable requirements into their operating permits for any Title V action that would have a final decision made on or after January 2, 2011.

Starting on July 1, 2011, PSD permitting requirements would be triggered for a modification that was determined to be major under PSD based on GHG emissions alone, even if no other pollutant triggered a major modification. In addition, a source that is not considered a PSD major source based on criteria pollutant emissions would become subject to PSD review if its facility-wide potential emissions equaled or exceeded 100,000 TPY of CO_2 equivalent (CO_2e) and 100 or 250 TPY of GHG on a mass basis depending on its listed status in ARM 17.8.801(22) and it undertook a permitting action with increases of 75,000 TPY or more of CO_2e and greater than 0 TPY of GHG on a mass basis. With respect to Title V, a source not currently holding a Title V permit that has potential facility-wide emissions equal to or exceeding 100,000 TPY of CO_2e and 100 TPY of GHG on a mass basis would be required to obtain a Title V Operating Permit.

Based on information provided by PPLM, PPLM's potential emissions exceed the GHG major source threshold of 100,000 TPY of CO_2e for both Title V and PSD under the Tailoring Rule.